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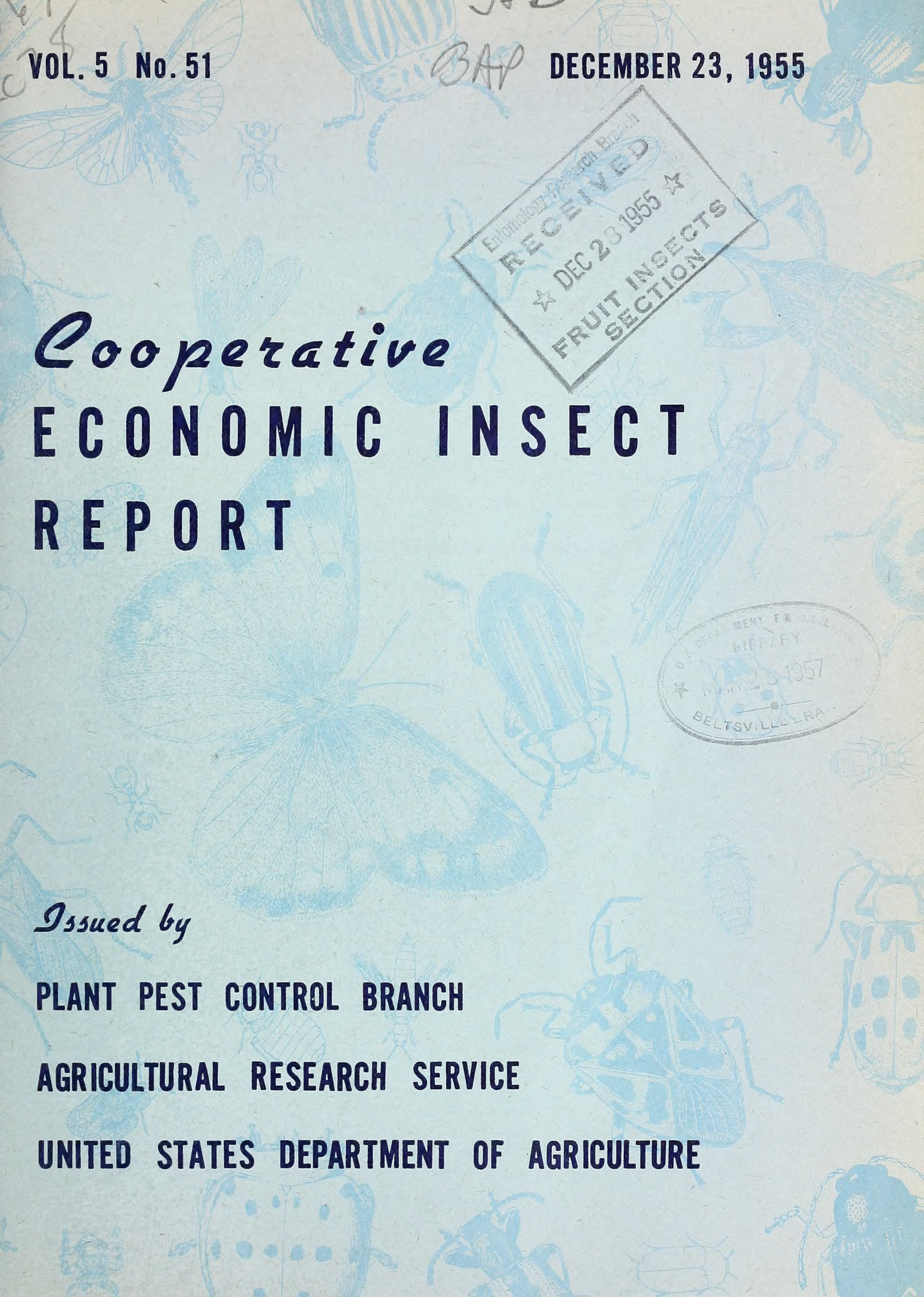

Cooperative ECONOMIC INSECT REPORT

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UNITED STATES DEPARTMENT OF AGRICULTURE

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ECONOMIC INSECT SURVEY SECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Branch serves as a clearing house and does not assume responsibility for accuracy of the material.

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Economic Insect Survey Section
Plant Pest Control Branch
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Volume 5 December 23, 1955 No. 51

COOPERATIVE ECONOMIC INSECT REPORT

Highlights of Insect Conditions

SPOTTED ALFALFA APHID damaging alfalfa in Johnston and Pottawatomie Counties, Oklahoma. (p. 1114). Texas, Kansas and California also report on this pest. (p.1111).

Additional collection of CITRUS BLACKFLY reported from lower Rio Grande Valley of Texas. (p.1115).

SUMMARY OF INSECT CONDITIONS - 1955 - in New Mexico (p. 1116) and Maryland (p. 1120).

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WEATHER BUREAU'S 30-DAY OUTLOOK

Mid-December 1955 to Mid-January 1956

The Weather Bureau's 30-day outlook for mid-December 1955 to mid-January 1956 calls for temperatures to average above normal in the Southwest and near normal along the Gulf Coast and in northern New England. In the remainder of the country below normal temperatures are expected, with the coldest weather in the Northern Plains.

Greater than normal amounts of snow are indicated in the northern third of the nation from the Great Lakes westward to the Pacific coast. Rainfall is expected to be above normal along the West Coast and below normal in the East. Subnormal precipitation is indicated in the southern half of the country, except near normal in the Tennessee Valley and along the Gulf Coast.

This report released by the Weather Bureau on December 16, 1955.

Weather forecast given here is based on the official 30-day "Resume and Outlook", published twice a month by the Weather Bureau. You can subscribe through Superintendent of Documents, Washington 25, D. C. Price $4.80 a year, $2.40 for six months.

WEATHER FOR THE WEEK ENDING DECEMBER 19, 1955

Unusually cold weather persisted over most of the United States for the third consecutive week as cold Arctic air continued to flow southward over the North American Continent. In many northern areas temperatures have averaged below normal since the first of November, and in some north-central sections the prolonged cold spell at this time is reminiscent of the winter of 1917-1918. Although temperatures were below normal virtually the entire week east of the Rockies, the lowest temperatures were recorded at most stations in that region the last 2 days of the period when minima fell to subzero levels from eastern Washington to the Great Lakes and southward in the Great Plains to Kansas and Missouri. A blizzard increased the severity of the weather in the Dakotas and some adjacent areas on the 13th and 14th, as a low pressure area passed eastward through southern Canada.

Minima fell to below-freezing levels each day in interior areas, on 4 mornings on the north Pacific Coast, and at most Gulf coastal stations from Appalachicola, Fla., to Houston, Texas, near the end of the period. Near freezing and scattered frost also occurred in the south-central portion of Florida on Saturday. Ponds, lakes (except the Great Lakes), and many streams in northern areas east of the Rockies are now frozen over. Ice is 11 inches thick on Lake Pepin at Minneapolis, Minn., 12 inches in the lake near Greenville, Maine, and floating ice was reported in the river at Harrisburg, Pa. Heavy precipitation during the week was limited to the central and north Pacific Coast, the lower Mississippi Valley, and the lower east coast of Florida. A few scattered northern areas received moderate amounts, but the lower Great Plains and Southwest had little or none at all. This was the eleventh consecutive dry week in Oklahoma where the soil is dry and loose and considerable dust occurred. Fall-seeded grains need rain badly throughout the lower Great Plains. There was little or no change in the snow cover during the week as snowfall was light and mostly limited to northern areas. Paradise Ranger station, Wash., reported a depth of 101 inches, Silver Lake, Utah 59, Houghton, Mich., 41, and Big Moose, N. Y. 14 inches. (Summary Supplied by U. S. Weather Bureau).

CEREAL AND FORAGE INSECTS

SPOTTED ALFALFA APHID - CALIFORNIA - Light infestations in alfalfa in Imperial County. Medium infestations in 2500 acres in San Diego County. Light to heavy infestations in San Bernardino County and light infestations in Santa Barbara County. Infestations general in Kern County and general in Kings County, where 3123 acres were treated. Moderate damage in Madera County and severe infestations in all alfalfa districts of Merced County. Some heavy infestations in Orange County and heavy in all districts of Fresno County. Light to medium infestations in Tehama County. (Cal. Coop. Rept., Nov.). TEXAS - Medium local infestations on alfalfa in Kaufman County. (Hawkins). KANSAS - Nymphs taken from sweeps of alfalfa December 16 at Manhattan, Riley County. Counts 1-5 per sweep. (Peters).

LEAF ROLLERS - TEXAS - Medium to heavy, local populations of *Platynota nigrocervina* and *Sparganothis sulfurana* (det. H. W. Capps) on alfalfa in Brazos River bottom of Burleson County. (Brazzel).

APHIDS - NORTH CAROLINA - Damaging small grain in some fields in Onslow County. Severity of infestations, probably greenbug, varies with oat varieties in Harnett County. (Jones).

CORN EARWORM (*Heliothis zea*) - CALIFORNIA - Heavy infestations in field corn in Merced County. (Cal. Coop. Rept., Nov.).

FRUIT INSECTS

Citrus Insect Situation, California, in November

CITRUS RUST MITE populations still light in San Diego County. A MITE (*Brevipalpus lewisi*) infestation heavy on tangerines in Imperial County. CITRUS RED MITE infestations medium in lemon orchards in Santa Barbara County. CITRUS BUD MITE infestations light to medium in lemon plantings in Santa Barbara County. COTTONY-CUSHION SCALE infestations moderate in citrus plantings in Imperial County and light to severe damage to citrus and ornamentals in Tulare County. BLACK SCALE infestations light to heavy in San Bernardino County. CALIFORNIA RED SCALE infestations light to medium in Santa Barbara County lemon orchards. Some YELLOW SCALE infestations severe in Tulare County. (Cal. Coop. Rept.).

WALNUT HUSK FLY (*Rhagoletis completa*) - CALIFORNIA - Correction: CEIR 5(47):1050. Report of occurrence in Sacramento County was in error. (Cal. Coop. Rept., Nov.).

GRAPE PHYLLOXERA (Phylloxera vitifoliae) - CALIFORNIA - Light to severe damage to grape roots in Tulare County. (Cal. Coop. Rept., Nov.).

PEACH TWIG BORER (Anarsia lineatella) - CALIFORNIA - Crack tests of harvested nuts showed considerable damage to almonds in Merced County. (Cal. Coop. Rept., Nov.).

TRUCK CROP INSECTS

APHIDS - CALIFORNIA - Causing medium damage to truck crops in Tulare County. Heavy damage to broccoli, cabbage, cauliflower and celery in Santa Barbara County and infesting cauliflower in Alameda County. Some heavy infestations of Brevicoryne brassicae in cabbage fields in Orange County and light infestations in broccoli in Santa Cruz County. Heavy infestations on cole crops in Monterey County. An unusually heavy infestation of a carrot aphid (Sappaphis foeniculus) damaged several hundred acres in Los Angeles County. First time control was necessary. (Cal. Coop. Rept., Nov.).

TOMATO PINWORM (Keiferia lycopersicella) - CALIFORNIA - Late tomatoes in Merced County 85 percent infested. (Cal. Coop. Rept., Nov.).

FOREST, ORNAMENTAL AND SHADE TREE INSECTS

Forest Insect Situation, Arkansas, as of December 1

IPS BEETLES activity reduced greatly in south central and southeastern areas by salvage work and cooler, wet weather. No reports of increased activity of BLACK TURPENTINE BEETLE. PALES WEEVIL activity has fallen off on pine production. Bulk of damage in 1955 within south central area. TWIG GIRDLER concentration, mostly on hickory, higher than usual in Howard-Polk County area. (Ark. State For. Comm.).

INSECTS AFFECTING MAN AND ANIMALS

SHEEP KED (Melophagus ovinus) - KANSAS - Light infestation on feeder sheep at one location in Johnson County with counts averaging 1-2 per wool-part examination. (Matthew).

CATTLE GRUBS (*Hypoderma* sp.) - KANSAS - Examination of 49 cattle at Manhattan, Riley County, December 7, showed 61 percent infested. Counts from 0-15 per animal with an average of three. Examination of 69 steers in a herd in Johnson County showed 98 percent infested and ranged from 0-39 with an average of nine per head. (Matthew).

HOUSE FLIES - ARIZONA - Flies, mainly *Musca domestica*, population indices of two small towns in southeastern Maricopa County and northwestern Pinal County. Average of five highest grill counts in nine blocks was as follows: November 6-12, 57.0; November 13-19, 18.2; November 20-26, 42.2; November 27-December 3, 17.6; December 4-10, 37.8. (Ariz. Coop. Rept.).

MOSQUITOES - CALIFORNIA - Larval occurrence of *Culex tarsalis* and *Aedes nigromaculis* steadily decreased in all regions examined. Small numbers of these species reported in a few Central Valley and southern localities. Foul-water *Culex* sp. main control problem in most areas. *Culiseta* sp. has steadily increased in the coastal region and *Anopheles* sp. continues in a few scattered areas in northern Central Valley. *Culex tarsalis* indices have steadily decreased in all areas except for slight increase in southern region. (Cal. Coop. Rept., Nov.).

BENEFICIAL INSECTS

LADY BEETLES - CALIFORNIA - With other predators, helping to check spotted alfalfa aphid in Orange County, but not as efficiently as during warmer weather. Predators falling behind aphid populations due to cool nights in San Diego County. (Cal. Coop. Rept., Nov.).

STORED PRODUCTS INSECTS

STORED RICE INSECTS - TEXAS - A survey of 13 bins of rough rice made in Beaumont area showed light infestations of moths and their larvae on the surface. (Bowling).

MISCELLANEOUS INSECTS

Light Trap Collections

TEXAS (College Station, 12/12-16): *Pseudaletia unipuncta*, 22; *Agrotis ypsilon*, 6; *Feltia subterranea*, 2. ALABAMA (Auburn, 12/3-9): *Feltia* spp., 2. SOUTH CAROLINA (Charleston, 12/5-11): *P. unipuncta*, 10; *A. ypsilon*, 14; *Feltia subterranea*, 4; *Heliothis zea*, 1.

Golden Nematode Survey, North Central States
Survey in important potato-producing areas of north central United States showed no infestations in Michigan, Wisconsin, Minnesota, North and South Dakota. Altogether, 8461 samples representing 85,991 acres in 88 counties were processed. (G N Cont. Prog.). In course of processing samples for golden nematode, a wheat nematode, Heterodera punctata, was recovered from Kittson and Clay Counties, Minnesota (Minn. Ins. Rept. Serv., Dec. 12) and from Pembina, Walsh, Towner and Grand Forks Counties, North Dakota. (N. D. Ins. Rept. Serv., Dec. 9).

ADDITIONAL NOTES

OKLAHOMA - CATTLE LICE very active in Harper County. CATTLE GRUBS 6-10 per head on several examined in Harper County. (Owens). Of 315 head of cattle received at Oklahoma City, December 12, 115 had no grubs; 51 had 1-10; 68 had 11-20; 71 had 20 or over (10 unaccounted for). SPOTTED ALFALFA APHID infestations severe in Johnston County. Seven alfalfa fields surveyed averaged 500 to 42,000 per square foot of alfalfa crown area. Other south central counties showed less severe to moderate infestations. Extensive damage to newly-planted alfalfa in Pottawatomie County. Lack of green growth probably limiting increase. Aphids active at temperatures in 40's. (Coppock).

FLORIDA - GREEN SCALE adults moderately infesting citrus stems near Ft. Pierce, St. Lucie County, December 6. (Campbell).
MINING SCALE adults severely infesting papaya at Stuart, Martin County, December 5. (Baker, Campbell, Williams). COCONUT SCALE in all stages severely infesting hyophorbe palm at Indian Rocks, Pinellas County. (Hill). Averaging 1000 per leaf on jambolan plum at Miami, Dade County. (Dowling). SOFT SCALE adults averaging 50 per leaf on orchid at Miami, Dade County. (Dowling). RED-HEADED PINE SAWFLY larvae collected on slash pine at Palmetto, Manatee County. Leaves all eaten, December 6. Larvae destroyed leaves on lower limbs of longleaf pines at Live Oak, Suwanee County. (Garland).
A SCALE (Parlatoria crotonis) in adult stage averaged 200 per leaf on croton at Miami, Dade County, December 2. (Shepard, Dowling).
A WAX SCALE (Ceroplastes sp. probably rubens) in nymphal stage averaged 200 per leaf on false aralia at Miami, Dade County, December 5. (Dowling). SOUTHERN GREEN STINK BUG nymphs averaged 50 per crotalaria plant near Ft. Pierce, St. Lucie County. (Williams, Campbell).

ADDITIONAL NOTES (Continued)

TEXAS - Nine larvae of CITRUS BLACKFLY (Aleurocanthus woglumi) were collected from a single leaf of a grapefruit tree in a 30-acre orchard near Mercedes in Hidalgo County, November 18. Arrangements were made immediately with Texas Department of Agriculture officials for spraying the infested orchard. (Cit. Blackfly Cont. Proj.).

VIRGINIA - CATTLE LICE (Solenoptes capillatus and Bovicola bovis) infestations still very light on dairy cattle at Blacksburg. (Turner, Raffensperger).

RECENT IMPORTANT INTERCEPTIONS AT PORTS OF ENTRY

Of unusual interest was the recent interception of a living adult weevil, identified as Anthonomus rectirostris (L.) in the seeds of Prunus nipponica in the mails from Japan at the Washington, D. C. Inspection House (Gouldman). This insect has been reported injurious to cherries in Switzerland, Germany, Sweden and other parts of Europe. Principal injury is due to the adults feeding on the young fruits causing considerable early drop. Adults also damage the fruits by oviposition punctures. In addition, the larvae feed inside the seeds but their injury is usually of minor importance. Anthonomus rectirostris seems to occur principally in wild cherries where occasional heavy populations build up that migrate to cultivated cherries to inflict heavy damage particularly in the vicinity of wooded areas, fence rows or hedges.

Observations on the biology of the insect in Switzerland indicate it hibernates in the adult stage in grass or leaves underneath the cherry trees. In the spring, adults feed on young leaves and fruits for two to four weeks. The adult females deposit eggs in the fruits near the seed from the first of May until the middle of June. Each female lays about 13 eggs. On hatching, the larvae bore into the seed, feed until about the end of July, then cut an exit hole for the future adults, and pupate in the seed. Pupal stage lasts about 2 weeks and adults emerge in August.

Living specimens of A. rectirostris have been intercepted occasionally in recent years in cherry seeds from Austria, Bulgaria, Czechoslovakia, Denmark, France, Germany and Japan at various ports. It is not known to occur in the United States. (Compiled by Plant Quarantine Branch).

SUMMARY OF INSECT CONDITIONS

NEW MEXICO

Reported by J. J. Durkin

Cereal and Forage Insects

GRASSHOPPERS were the major insect problem in the State. A survey of adult grasshoppers showed close to 3 million acres of range and crop land with threatening to very severe infestations. During the spring and summer of 1955, 458,003 acres of rangeland were sprayed at a total cost of $205,674. Losses to grasshoppers on range and crop lands over the State are estimated at $2,500,000. They were numerous on cereal and forage crops in spotted areas over the State. Almost every county had light to heavy infestations on field crops. Grasshoppers caused severe damage to field crops in Mora, Taos, Santa Fe, San Juan, Rio Arriba and Bernalillo Counties. The SPOTTED ALFALFA APHID began building damaging infestations in May and continued to cause damage until mid-July. Most growers were familiar with the aphid after the sneak attack in 1954, so damage was fairly light, but control costs were heavy, probably costing farmers in the State over one million dollars. After mid-July the rains seemed to keep the aphid under control until late September, when it began building up again in some areas, only to subside and appear again on seedling stands in November. LYGUS BUGS (_Lygus elisus_ and _L. hesperus_) and SAY STINK BUG (_Chlorochroa sayi_) damaged alfalfa seed crops in Quay County. These two pests took over when the spotted alfalfa aphid populations diminished.

CORN EARWORM (_Heliothis zea_) and ALFALFA CATERPILLAR (_Colias philodice eurytheme_) were numerous in some areas but were controlled in most cases by cutting early before too much loss was sustained. PEA APHID (_Macrosiphum pisi_) populations were high in alfalfa during most of the growing season. Ordinarily, the pea aphid is a minor pest only during the first month of the growing season, but abnormally cool weather throughout the summer seemed to keep it thriving in the northern half of the State from April to October. BLISTER BEETLES caused damage to alfalfa crops in a few areas in Lea, Rio Arriba, and Grant Counties. STINK BUG populations were heavy on barley and oats in irrigated sections during June. GRAIN APHIDS also infested barley fields throughout the State but damage was light. CORN LEAF APHID (_Rhopalosiphum maidis_) was a pest on broom corn in Quay County but control measures were effective. CORN EARWORM heavily infested field corn, sweet corn, and broom corn in Quay County and other areas of the State. TWO-SPOTTED SPIDER MITE (_Tetranychus telarius_) was heavy on corn in Torrance and Valencia Counties. FALSE CHINCH BUGS (_Nysius_ spp.) were severe on sorghums in Curry County.

Fruit Insects

CODLING MOTH (Carpocapsa pomonella) was a problem in all fruit-growing areas. Orchards on recommended spray schedule had little loss, but in those not sprayed, as high as 25 percent of the apples were lost. WOOLLY APPLE APHID (Eriosoma lanigerum) occurred in light to heavy infestations throughout the State depending on control measures. Heavy build-ups during harvest were noted in several areas. ORCHARD MITES (Tetranychus telarius, Bryobia praetiosa and Metatetranychus ulmi) were also present in orchards throughout the State. Populations increased rapidly during harvest and eggs are extremely numerous in many orchards. LEAFHOPPERS were very numerous in orchards in Bernalillo, Santa Fe, San Juan, and Rio Arriba Counties. BUFFALO TREEHOPPER (Stictocephala bubalus) damage was light to moderate in most fruit-growing areas. GRAPE LEAFHOPPERS (Erythroneura sp.) were very abundant on grapes in Dona Ana County, causing severe damage to foliage. JUNE BEETLES (Cotinis texana and Phyllophaga spp.) were numerous on grapes and peaches in Dona Ana and San Juan Counties. MEALYBUGS were found on grapes in De Baca County, but the infestation was very light and no damage was apparent. PECAN APHIDS (Monellia costalis and Melanocallis caryaefoliae) were heavy on pecans in the Mesilla Valley during the early part of the summer. A WEEVIL (Euclyptus derivatus) was found in large numbers on wild cherry trees in Lincoln County.

Vegetable Insects

ONION THRIPS (Thrips tabaci) was a major pest on onions in the Mesilla Valley. Damage was not extensive because control measures were effective. TOMATO HORNWORMS (Protoparce spp.) populations were heavy on tomatoes in the Deming area and caused early defoliation. TOMATO FRUITWORM (Heliothis zea) severely damaged tomatoes in the Deming area, where some growers lost as much as 25 percent of crop. LEAF MINERS (Liriomyza spp.) were an early season pest of cantaloupes in the Tucumcari area and in the Mesilla Valley. MELON APHID (Aphis gossypii) was a problem on melons throughout the season in Dona Ana County and in the Tucumcari area. MEXICAN BEAN BEETLE (Epilachna varivestis) damaged beans in spotted areas but were not the serious problem they have been in past years. GRASSHOPPERS destroyed several small bean plantings in Mora and Taos Counties. CABBAGE LOOPER (Trichoplusia ni) and BEET ARMYWORM (Laphygma exigua) attacked seedling lettuce early in the season, but after heavy losses to such insects last year, growers were ready and control was effective. SPOTTED CUCUMBER BEETLES (Diabrotica sp.) were present on most crops, but no damaging infestations were reported.

Cotton Insects

SEED-CORN MAGGOT (Hylemya cilicrura) caused damage to newly-planted cottonseed in April and May and made replanting necessary in some areas. DARKLING BEETLES were numerous in the Pecos Valley and injured young seedlings. THRIPS (Frankliniella spp. and Thrips tabaci) and APHIDS (Aphis medicaginis and A. gossypii) plagued growers in all cotton-growing areas from early May to mid-July. BOLLWORMS (Heliothis zea) were the worst pest of the season, causing severe damage in Chavez and Luna Counties and threatening the cotton crop in other areas. COTTON FLEAHOPPER (Psallus seriatus) was moderately abundant in most cotton fields, causing square drop and damaging terminal growth, but was not considered a severe threat. LYGUS BUGS (Lygus hesperus and L. elisus) were present in most fields, but no heavy infestations were reported, and damage was light. SUPERB PLANT BUG (Adelphocoris superbus) caused severe damage to a few fields in Dona Ana County, but elsewhere was not considered important. COTTON LEAFWORM (Alabama argillacea) was very light and caused light damage in a few spotted areas.

CABBAGE LOOPER (Trichoplusia ni) appeared in Eddy County, but damage was very light. SAY STINK BUG damaged several areas by staining lint and causing premature and uneven opening of bolls. In most areas their presence was not evident until the injury was found. PINK BOLLWORM (Pectinophora gossypiella) was not a major concern, but one field in southern Dona Ana County had a 10 to 15 percent infestation and lint cleaner inspections indicated that Lea, Eddy and Dona Ana Counties may have had light to medium infestations in some areas. TWO-SPOTTED SPIDER MITE (Tetranychus telarius) infestations were generally light, with a few heavy late-season infestations in widely-scattered areas. Heavy infestations occurred where plant populations were low and soils were light.

Insects of Ornamentals and Shade Trees

APHIDS were heavy on American elm, pecans, roses, euonymus, arborvitae, and willow. CALIFORNIA PRIONUS (Prionus californicus) damaged willows, cottonwoods, poplars, and other softwoods throughout the State. PINE NEEDLE SCALES (Phenacaspia pinifoliae) were problem on cedar trees in Santa Fe. EUONYMUS SCALE infestations were heavy on euonymus in Albuquerque. SPIDER MITES webbed and discolored cypress and juniper trees throughout the State. TENT CATERPILLARS (Malacosoma spp.) damaged cottonwoods, poplars, and pecans. BAGWORM infestations were light to medium in a few spotted areas over the State and were most numerous on Chinese elm. A NITIDULID (Conotelus mexicanus) damaged rose buds and blooms in Dona Ana County.

Insects Affecting Man and Animals

HORN FLY (Siphona irritans) populations were very high in most cattle-raising areas over the State. Counts in Dona Ana County averaged 500 per animal. CATTLE LICE were a problem on range and dairy cattle during the winter months. SCREW-WORMS caused concern in several areas of the State. COMMON CATTLE GRUB (Hypoderma lineatum) infestations were very heavy on range cattle, causing as much as a two-dollar-per-head cut in market value. HOUSE FLIES and MOSQUITOES were a problem in many areas after heavy rains in July. BOXELDER BUGS were very numerous in several cities and were a general nuisance around homes, motels and in business districts. CLOVER MITES (Bryobia praetiosa) were a nuisance in homes. SPRINGTAILS were also a nuisance in homes and were especially numerous after application of cottonseed hulls to lawns. A CARABID (Calosoma semilaeve) appeared in large numbers in many cities in the southern half of the State, causing concern to hotel, motel, and restaurant operators. BLOOD-SUCKING ASSASSIN BUGS and BEDBUGS were numerous in Espanola and Tucumcari.

Beneficial Insects

LADY BEETLES (Hippodamia convergens and H. parenthesis) were very numerous in alfalfa fields and moderately abundant in cotton fields early in the growing season. A DAMSEL BUG (Nabis ferus) and a COLLOPS (Collops vittatus) were moderately abundant in cotton and alfalfa. A BIG-EYED BUG (Geocoris punctipes) was numerous in cotton fields in most areas. LACEWINGS (Chrysopa spp.) were very numerous in cotton fields in the State. In some areas, bollworm populations and damage were very low, possibly because of high lacewing populations. A CARABID (Calosoma semilaeve) adults and larvae were very numerous on range and dry land farms in Lincoln and Socorro Counties.

Miscellaneous Insects

WHITE-LINED SPHINX (Celerio lineata) was very numerous on rangelands and migrated in armies across highways and open fields. In populated areas, it caused concern, but no damage to crops or home gardens was reported, and the loss on rangeland was negligible. GEOMETRID LARVAE (Sterrha bonifata) were very numerous on one- and two-year old baled hay in a hay barn in Dona Ana County.

SUMMARY OF INSECT CONDITIONS - 1955

MARYLAND

Compiled by W. C. Harding, Jr.

More Important Pests in 1955

CORN EARWORM (Heliothis zea) caused serious ear damage to early and late sweet corn and field corn and was more than normally destructive to pods of late snap and lima beans as well as soybeans. Damage was heaviest on the Eastern Shore.

FALL ARMYWORM (Laphygma frugiperda) on late sweet corn crop was heavier than usual. During August late field corn from Calvert to Carroll Counties was damaged considerably with some replanting necessary.

EUROPEAN CORN BORER (Pyrausta nubilalis) damage to canning corn was about normal, with some damage to wheat and potatoes. The 1955 fall infestation survey showed the State average of borers per 100 plants to be 140. In 1954 it was 41 per 100 plants. This year the principal increase was on the Eastern Shore, where the average for 9 counties was 246 per 100 plants as compared with 55 per 100 in 1954. On the basis of 3 percent damage for each borer per stalk (USDA), it is estimated that the loss in Maryland for 1955 amounted to 713,000 bushels valued at approximately $1,076,630.

ALFALFA WEEVIL (Hypera postica) was again destructive on first-growth alfalfa, and the second growth in some areas was held back by larvae and adults. Its range was extended somewhat and now the weevil is economically destructive in all counties except Allegany and Garrett. Spraying was general over most of the State.

PEA APHID (Macrosiphum pisi) was abundant on alfalfa in the spring and growers included materials in their sprays to control it. Populations were heaviest the latter part of April in central Maryland and on the Eastern Shore.

Estimates on the loss of hay by all insects amount to $2,000,000. Loss of alfalfa hay to the alfalfa weevil is estimated at $750,000.

HORNWORMS (Protoparce spp.) caused moderate to heavy damage in late August to the southern Maryland tobacco crop. Some fields were so badly damaged as to be not worth harvesting. Two hurricanes interrupted all field work so that practically nothing could be done before August 20.

FLEA BEETLES - 1955 was the worst year for the tobacco flea beetle (Epitrix hirtipennis) on record. Heavy damage was done to plants in the field, and in many instances injury was noticeable to the choice mid-leaves. Estimated loss of tobacco due to flea beetles and hornworms amounted to $1,158,000. Flea beetles were also injurious on potatoes, tomatoes, and corn, and were unusually abundant on cabbage and other crucifers during early 1955.

CUTWORMS - Damage to corn, tomatoes, beans, and potatoes was moderate to heavy during the spring and early summer. They were unusually severe on crops planted after sod. Over 2,000 acres of the above crops had to be partly or completely replanted. The predominating cutworm moths caught in the black light trap at Fairland were the black cutworm (Agrotis ypsilon) and the variegated cutworm (Peridroma margaritosa).

UNSPOTTED TENTIFORM LEAF MINER (Callisto geminatella) - First commercial damage on apples occurred during 1954. Serious defoliation of many orchards took place in 1955. Special sprays will be needed in 1956 for control if this insect continues abundant.

MOSQUITOES were a serious problem in 1955, especially in the Chesapeake Bay area where the salt-marsh mosquito (Aedes sollicitans) was abundant. This species was observed as far inland as College Park. In central Maryland the principal biting mosquito was the northern house mosquito (Culex pipiens). Other fresh water species encountered were Aedes vexans and Aedes canadensis. Heavy rains in August played an important part in the population increase.

Other Insects by Crops

Corn and Grain Insects

ARMYWORM (Pseudaletia unipuncta) was light over the entire State in 1955, with some damage to barley and wheat in St. Marys and Talbot Counties. CORN FLEA BEETLE (Chaetocnema pulicaria) populations were lighter than in 1954. A CORN SAP BEETLE (Carpophilus lugubris) infestations in harvested sweet corn ranged from light to heavy. A SOD WEBWORM (Crambus sp.) damaged young corn in Allegany and Garrett Counties in June. WIREWORMS damaged newly-sprouted corn in some areas. HESSIAN FLY (Phytophaga destructor) damage to wheat was heavy in central and western Maryland.

Insects of Forests, Shade Trees and Ornamentals

PINE SAWFLY surveys revealed light to heavy defoliation by *Neodiprion pratti pratti* of approximately 1,500 acres of Virginia and pitch pine in central and southern Maryland in May. On the Eastern Shore during May, *Neodiprion americanus americanus* inflicted light to moderate foliage damage to 500 acres of loblolly pine. NANTUCKET PINE MOTH (*Rhyacionia frustrana*) did severe tip damage to 200 acres of red and Scotch pine watershed plantings in Baltimore County.

LOCUST LEAF MINER (*Chalepus dorsalis*) caused heavy defoliation on black locust in all sections in June and July. ELM LEAF BEETLE (*Galerucella xanthomelaena*) was heavy on American elm in most sections. SMALLER EUROPEAN ELM BARK BEETLE (*Scolytus multistriatus*), principal insect vector of Dutch elm disease, was found in Montgomery County in August emerging from bark of elm trees killed by the disease. ASIATIC OAK WEEVIL (*Cyrtepistomus castaneus*) damaged oak foliage in Baltimore County in August. EASTERN TENT CATERPILLAR (*Malacosoma americanum*) was heavy on wild cherry and fruit trees. MIMOSA WEBWORM *Homadaula albizziae*) caused webbing on mimosa trees during the summer over most of the State. BAGWORM (*Thyridopteryx ephemeraeformis*) was severe on arborvitae and cedar. EUONYMUS SCALE (*Unaspis euonymi*) was common on euonymus and bittersweet. LACE BUGS were heavy on azaleas and rhododendrons in many areas. OLIVE SCALE (*Parlatoria oleae*) was moderate to heavy on privet hedge in Baltimore City.

BOXWOOD LEAF MINER (*Monarthropalpus buxi*) was troublesome in April and May and the BOXWOOD PSYLLID (*Psylla buxi*) was injurious to English boxwood. HOLLY LEAF MINERS were present on holly in April in all sections. SPIDER MITES were heavy on untreated ornamentals, especially spruce and arborvitae, during the summer. IRIS BORER (*Macronoctua onusta*) damaged the shoots and leaves of iris at College Park in July. JAPANESE BEETLE (*Popillia japonica*) populations were low generally; however, there were more than usual number of reports of damage to ornamentals and crops.

Hay and Forage Insects

MEADOW SPITTLEBUG (*Philaenus leucophthalmus*) populations on alfalfa and clover were less than in 1954; there were some localized heavy populations principally on red clover. POTATO LEAFHOPPER (*Empoasca fabae*) was generally light on alfalfa over the State, some damage to later cuttings in central Maryland. GRASSHOPPERS again caused local damage to alfalfa and clover, principally in Montgomery and Frederick Counties, during July and August. LESSER CLOVER LEAF WEEVIL (Hypera nigrirostris) was injurious to red and ladino clover in different sections. Adults in June held back new red clover growth in Queen Annes County. Lepidopterous larvae swept from alfalfa during the spring and summer included GREEN CLOVERWORM (Plathypena scabra), ALFALFA CATERPILLAR (Colias philodice eurytheme) and GARDEN WEBWORM (Loxostege similalis). In addition, the YELLOW-STRIPED ARMYWORM (Prodenia ornithogalli) larvae held back new alfalfa seedings in Baltimore County in early October.

*See Soybean Insects, p. 1126

Insects of Fruit and Nuts

CODLING MOTH (Carpocapsa pomonella) damage to apples has continued to increase during the past two years. There are indications that it has built up some resistance to DDT. RED-BANDED LEAF ROLLER (Argyrotaenia velutinana), a serious pest of apples in 1955, is causing commercial damage in many orchards; it appears to be more difficult to control than a few years ago. ROSY APPLE APHID (Anuraphis roseus) caused some damage in commercial orchards during 1955. The dinitro materials appear to be less effective against this pest than they were a few years ago. ORCHARD MITES were less prevalent in 1955 than in 1954. SCALE INSECTS continue to do damage in isolated apple orchards. Dormant oil sprays gave excellent control, however. DIFFERENTIAL GRASSHOPPER (Melanoplus differentialis) averaged 15 per square yard in apple orchard in Harford County in August. Damage to young trees was heavy.

On peaches PLUM CURCULIO (Conotrachelus nenuphar), ORIENTAL FRUIT MOTH (Grapholitha molesta) and CATFACING INSECTS were found in a few isolated orchards where the spray program was not followed. PEACH TREE BORER (Sanninoidea exitiosa) damage was not reported in peach orchards where the spray program was followed; however, some damage to sour cherries and plums was reported by several growers.

Insect damage to strawberries on the Eastern Shore was comparatively light. In the spring a STRAWBERRY LEAF ROLLER (Ancylis sp.) and the STRAWBERRY WEEVIL (Anthonomus signatus) did moderate injury to leaves and buds. PUTNAM SCALE (Aspidiotus ancylus) was found on the leaves, stems and fruit of blueberries in Wicomico County and there was some damage to blueberry foliage at the Agronomy Research Farm by the larvae of Datana drexili in September.

ASIATIC OAK WEEVIL (Cyrtepistomus castaneus) damaged commercial chestnut foliage in Prince Georges County in August. In chestnut orchards where no sprays were applied, damage to the nuts by weevils, principally the SMALL CHESTNUT WEEVIL (Curculio auriger) exceeded 90 percent.

Vegetable Insects

BEAN LEAF BEETLE (*Cerotoma trifurcata*) did light to moderate damage to snap beans on the Eastern Shore in May and June. MEXICAN BEAN BEETLE (*Epilachna varivestis*) populations on commercial plantings of snap beans and lima beans were heavier than in 1954. Infestations of the STRIPED CUCUMBER BEETLE (*Acalymma vittata*) and the SPOTTED CUCUMBER BEETLE (*Diabrotica undecimpunctata howardi*) on beans and cucurbits were about normal. TWO-SPOTTED SPIDER MITE (*Tetranychus telarius*) was light on beans and POTATO LEAFHOPPER (*Empoasca fabae*) populations on snap beans were below normal. SEED-CORN MAGGOT (*Hylemya cilicrura*) caused some replanting of beans in Caroline County. Other pests that caused bean growers concern were THRIPS and the BEAN APHID (*Aphis fabae*). HORNWORMS (*Protoparce* spp.) were heavier than usual on the tomato crop. TOMATO RUSSET MITE (*Vasates lycopersici*) infestations were reported from five counties; however, damage was comparatively light. VINEGAR GNATS (*Drosophila* sp.) were serious at canneries in August and September. COLORADO POTATO BEETLE (*Leptinotarsa decemlineata*) did moderate to heavy damage to both tomatoes and potatoes in all sections early in the season. PEA APHID (*Macrosiphum pisi*) infestations on peas about normal. ASPARAGUS BEETLE (*Crioceris asparagi*) adults were abundant on commercial plantings in Cecil and Kent Counties in late May. WIREWORMS were troublesome in localized areas, principally on the Eastern Shore, damaging both potatoes and sweetpotatoes. TORTOISE BEETLES and FLEA BEETLES again damaged sweetpotato foliage in Wicomico, Somerset and Worcester Counties. IMPORTED CABBAGEWORM (*Pieris rapae*) butterflies were unusually abundant over the State and larval infestations were quite general on cabbage, broccoli and kale throughout the season. CABBAGE LOOPER (*Trichoplusia ni*) was quite abundant during the summer on cabbage and broccoli on the Eastern Shore. YELLOW-STRIPED ARMYWORM (*Prodenia ornithogalli*) and the GARDEN WEBWORM (*Loxostege similalis*) damaged newly emerged spinach in Kent County in September. The 1955 State-Federal WHITE-FRINGED BEETLE Survey in Maryland proved negative.

Tobacco Insects

Light to moderate injury was done to plants in beds by GREEN JUNE BEETLE (*Cotinis nitida*) larvae, FLEA BEETLES and CUTWORMS. VEGETABLE WEEVIL (*Listroderes costirostris obliquus*) larvae inflicted spotty damage to plants in beds in St. Marys and Calvert Counties. Damage this year was heavier than last year, and the weevil is apparently extending its range in southern Maryland. Plants newly set in the field were troubled with cutworms and in Prince Georges County there was light damage to young plants by the STALK BORER (*Papaipema nebris*) in May. TOBACCO BUDWORM (*Heliothis virescens*) did moderate damage to plants in the field. GREEN PEACH APHID (Myzus persicae) was light on tobacco in 1955, practically no treating done.

Insects Affecting Man and Animals

BLACK FLIES (Simulium sp.) and EYE GNATS (Hippelates sp.) were extremely troublesome during the summer to residents in different sections, particularly suburban Washington. In the fall many reports were received from various sections of the State of stinging caterpillars, including the SADDLEBACK CATERPILLAR (Sibine stimulea) and PUSS CATERPILLAR (Megalopyge opercularis). A survey in January of young beef cattle in Montgomery County showed that 75 out of 110 animals on five farms were infested with CATTLE GRUBS. There were from one to 30 grubs per animal. Around Maryland dairy and beef farms there were the usual numbers of BITING FLIES, and the HOUSE FLY (Musca domestica) was heavy around dairy and beef barns in all localities. A heavy infestation of NORTHERN FOWL MITE (Bdellonyssus sylviarum) was found on 2,000 white leghorn chickens at Chestertown in February; controls were applied. FOWL TICKS (Argas persicus) found attacking young chickens in Harford County.

Stored Products Insects

ANGOUMOIS GRAIN MOTH (Sitotroga cerealella) was heavy in stored corn in central Maryland in September. CADELLE (Tenebroides mauritanicus) damaged stored wheat and other small grains in Washington and Talbot Counties. INDIAN-MEAL MOTH (Plodia interpunctella) injured small grains in storage in Washington County.

Household Insects

Numerous reports were received of the BOXELDER BUG (Leptocoris trivittatus) congregating on and entering homes in the winter and spring. Small numbers of a MURKY MEAL CATERPILLAR (Aglossa caprealis) larvae were found in homes in Prince Georges and Dorchester Counties. In late summer the ASIATIC OAK WEEVIL adults caused homeowners in central Maryland concern by flying to screens and windows at night. Other insects that caused householders trouble during the year were OLD HOUSE BORER (Hylotrupes bajulus), ELM LEAF BEETLE (Galerucella xanthomelaena), BLACK WIDOW SPIDER (Latrodectus mactans), ANTS, TERMITES* and COCKROACHES. The BROWN-BANDED ROACH (Supella supellectilium) is becoming more plentiful.

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*Dominant species in Maryland is Reticulitermes flavipes (Kollar); however, Reticulitermes virginicus (Banks) was identified from Port Deposit, Cecil County, in June.

Soybean Insects

Principal pests of soybeans during the year were the GREEN CLOVERWORM, BEAN LEAF BEETLE, and the JAPANESE BEETLE. A fungus disease (*Spicaria rileyi*) was found quite common on the green cloverworm in September. C. G. Thompson, Beekeeping and Insect Pathology Section, found the former quite effective in controlling the insect. STRAWBERRY SPIDER MITE (*Tetranychus atlanticus*) was much lighter this year than in 1954. Unusual damage to young soybean foliage from the feeding of the CLOVER ROOT CURCULIO (*Sitona hispidula*) was noted in St. Marys County in June; the soybeans had followed ladino clover.

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